AMENDMENTS TO THE CLAIMS

1.   **(Amended)** A method to create a digital model of a patient's teeth, comprising:

taking an impression of the patient's teeth using ~~a dental tray containing a radiopaque~~ ~~agent~~ <u>a dental impression system, the system including an impression material and a dental tray adapted to hold the impression material, the impression material having a given x-ray attenuation factor, the tray comprising a thermoplastic resin compounded with at least one radiopaque agent, the dental tray having an attenuation factor not exceeding a level 50% greater than that of the impression material;</u>

scanning the impression and the dental tray using a radiographic source; and

generating the digital model with scanned data.

2.   **(Original)** The method of claim 1, further comprising passing a radiation source through a scintillator.

3.   **(Original)** The method of claim 2, further comprising digitizing the output of the scintillator.

4.   **(Original)** The method of claim 1, wherein the impression of the teeth is taken in a dental tray having detachable portions.

5.   **(Original)** The method of claim 1, further comprising taking a bite impression of the patient

6.   **(Original)** The method of claim 5, wherein the bite impression is taken using a PVS material.

7.   **(Original)** The method of claim 5, wherein the bite impression is taken using a wax bite.

8.   **(Original)** The method of claim 1, wherein an upper teeth impression, a lower teeth impression, and a bite impression are scanned together.

9.   **(Original)** The method of claim 8, further comprising digitally reversing data from the upper and lower impression scan data to make positive data.

10.   **(Original)** The method of claim 9, wherein the digital reversing identifies inner surfaces of an impression material and extracting the inner surfaces using a largest connected component algorithm.

11.   **(Amended)** The method of claim 1, further comprising aligning data into a bite position using the ~~bite~~ <u>impression</u> material scanned.

12.   **(Original)** The method of claim 1, further comprising digitally detailing the teeth data.

13.   **(Original)** The method of claim 1, further comprising setting a final bite.

14.   **(Original)** The method of claim 1, further comprising articulating the digital model.

15.   **(Amended)** A system to create a digital model of a patient's teeth, comprising:

A dental tray ~~containing a radiopaque material adapted to take an impression of the patient's teeth~~ <u>adapted to hold an impression material, the impression material having a given x-ray attenuation factor, the tray including a thermoplastic resin compounded with at least one radiopaque agent, the dental tray having an attenuation factor not exceeding a level 50% greater than that of the impression material</u>;

a radiation source;

a scintillator to receive the radiation from the radiation source; a radiation detector coupled to the scintillator;

a rotatable table positioned between the radiation source and the scintillator, the table being adapted to support the dental tray with the impression of the patient's teeth; and

a computer coupled to the detector to generate the digital model with scanned data.

16.   **(Original)** The system of claim 15, wherein the radiation source is an X-ray source.

17.   (Original) The system of claim 15, wherein the radiation source is a computed tomography source.

18.   (Original) The system of claim 15, wherein the rotatable table is adapted to support an upper teeth impression, a lower teeth impression and a bite impression.

19.   (Original) The system of claim 15, further comprising a fabrication machine coupled to the computer to generate a plurality of appliances, wherein the appliances comprise polymeric shells having cavities and wherein the cavities of successive shells have different geometries shaped to receive and resiliently reposition the teeth from one arrangement to a successive arrangement.

20.   (Original) The system of claim 15, wherein the dental tray comprises: a base having a plurality of prongs, the base having one or more openings to allow flowing of the dental impression material; a first wall extending from one side of the base, the first wall having one or more openings to allow flowing of the dental impression material; and at least one detachable portion formed on one end of one prong, the detachable portion being removable to shorten the prong length.

21.   (New) The method of claim 1, wherein the dental tray has an attenuation factor between approximately 100% and approximately 150% that of the impression material.

22.   (New) The method of claim 1, wherein the dental tray has an attenuation factor approximately 100% that of the impression material.

23.   (New) A method of enhancing the quality of scanned data from a dental impression, the dental impression being made with a dental impression system, the impression system including an impression material and a dental tray adapted to hold the impression material, the tray including a thermoplastic resin, the impression material having a given x-ray attenuation factor, the method comprising: incorporating at least one radiopaque agent into the thermoplastic resin to confer on the tray an x-ray attenuation factor that is no more than 50% greater than that of the impression material.

24.   **(New)** A dental impression tray adapted to hold a given impression material, the impression material having a given x-ray attenuation factor, the tray comprising a thermoplastic resin compounded with at least one radiopaque agent to confer on the tray an attenuation factor not exceeding a level 50% greater than that of the impression material.

25   **(New)** The method of claim 24, wherein the dental tray has an attenuation factor between approximately 100% and approximately 150% that of the impression material.

26   **(New)** The method of claim 24, wherein the dental tray has an attenuation factor approximately 100% that of the impression material.

27.   **(New)** The dental impression tray of claim 24, wherein the at least one radiopaque agent is selected from the group consisting of barium sulfate, calcium carbonate, calcium chloride, sodium carbonate, magnesium sulfate, bismuth trioxide, bismuth subcarbonate, bismuth oxychloride, tungsten, gold, platinum, and silver.

28.   **(New)** The dental impression tray of claim 24, wherein the tray has one or more detachable portions.

29.   **(New)** A dental impression system comprising an impression material and an impression tray adapted to hold the impression material, the impression material having a given x-ray attenuation factor, the tray including a thermoplastic resin compounded with at least one radiopaque agent to confer on the tray an attenuation factor not exceeding a level 50% greater than that of the impression material.

30.   **(New)** The dental impression system of claim 29 wherein the impression material comprises at least one radiopaque agent.

31.   **(New)** The dental impression system of claim 29, wherein the radiopaque agent is one or more agent selected from the group consisting of barium sulfate, calcium carbonate, calcium chloride, sodium carbonate, magnesium sulfate, bismuth trioxide, bismuth subcarbonate, bismuth oxychloride, tungsten, gold, platinum, and silver.

32.   **(New)** The dental impression system of claim 30, wherein the radiopaque agent is one or more agent selected from the group consisting of barium sulfate, calcium carbonate, calcium chloride, sodium carbonate, magnesium sulfate, bismuth trioxide, bismuth subcarbonate, bismuth oxychloride, tungsten, gold, platinum, and silver.